October 3, 2004

Metro Louisville Air Pollution Control District
Mr. Jonathan L. Trout
850 Barret Ave.
Louisville, KY 40204-1745

RE: Sierra Club Comments on Draft Strategic Toxic Air Reduction Regulations

Dear Mr. Trout:

What follows are the comments of the Greater Louisville Group of the Sierra Club ("Sierra Club") on the proposed modifications to existing regulations and proposed new regulations comprising the Strategic Toxic Air Reduction ("STAR") program. The mission of the Sierra Club includes protection and restoration of the quality of the natural and human environment. The Greater Louisville Group of the Sierra Club consists of approximately 1,800 members throughout a fifteen-county region, including Jefferson, Oldham, Bullitt, Shelby, and Trimble Counties.

The Sierra Club supports these regulations and commends both the Metro Louisville Air Pollution Control District ("the District") and Mayor Jerry Abramson for taking this important step. **The STAR program is a reasonable and necessary response to the *West Louisville Air Toxics Study* which showed unacceptable human health risks exist in our community from emissions of certain air toxics. In addition to the risks to the residents of Louisville, poor air quality can deter and detract from important economic development goals, particularly initiatives to attract "new economy" businesses and professionals who seek areas that offer a high quality of life.**

The Sierra Club supports the framework, technical underpinnings, goals, and standards in the proposed regulations. The proposed regulations are based on sound science and analysis and build on experience in other states and regulatory arenas. Our comments are primarily focused on making the process more open and accessible to the communities who are affected by industrial pollution and at increasing the reductions that can be achieved by limiting the exemptions.

We particularly urge the District to:

- Include excess emissions that occur during startups, shutdowns, and malfunctions in the STAR program (see Comments 3, 6, 16, 19, and 24 below).
- Require compliance demonstrations and reporting for all toxic air contaminants, not just the Category 1 and 1A contaminants (see Comments 7 and 46 below).

- Ensure that the environmental acceptability levels are enforced through emission standards in operating permits both new and existing sources (see Comments 25 through 30 below).
- Provide greater public access to emission estimation and monitoring data (see Comments 3 and 14 below).

Further, while we believe the District is exercising appropriate authority to address a demonstrated, compelling public health concern through this program, we also believe that future modifications of the program should address the risks posed by air toxics emitted by mobile and area sources.

Our technical comments follow, organized by regulation. References to line numbers refer to those in the version as drafted and posted on the District's website. We will gladly provide copies of any references cited herein. These comments were prepared with substantial technical assistance from Dr. Phyllis Fox, P.E., DEE, a consulting environmental engineer, who has over 30 years of experience evaluating air pollution from industrial facilities in over 20 states.

Regulation 1.02: Definitions

1. The new language added to Sec. 1.6, "ambient air," should be expanded to clarify that ambient air, for purposes of determining the concentration of an air contaminant, includes "the atmosphere, external to buildings, that is beyond the property line of that stationary source, ***to which the general public has access***" (bolded and italicized language proposed to be added). This is important because the public may have access via public roads or rail tracks to buffer zones and even the heart of industrial facilities. This access could lead to adverse acute health impacts. Further, some facilities may provide on-site residences, whose inhabitants deserve protection from adverse health impacts.

2. The definitions should be expanded to include the following additional terms that are used in Regs. 5.20, 5.21, and 5.23: goal, standard, chronic noncancer effect, acute noncancer effect, allowed emissions, maximum ambient concentration, and maximum concentration.

3. The definition of "malfunction" in Sec. 1.37 should be expanded to include emissions that result in exceeding environmental acceptability levels ("EALs") as defined in Reg. 5.21.

4. The definition of "toxic air contaminant" in Sec. 1.70 excludes any air contaminant for which there is a national ambient air quality standard ("NAAQS"). This exclusion is not protective of public health. The NAAQS are set on air contaminants that are also toxic, including SO_2, NOx, PM10, PM2.5, ozone, and lead. The public inhales air that includes the NAAQS plus many other air contaminants. The entire collection of contaminants causes health impacts, not just the currently unregulated contaminants. It is not possible to reasonably evaluate a subset of these contaminants in isolation. All air contaminants

should be included in the calculations of environmental acceptability levels in Regs. 5.21. (See also Comment 47 below.)

Regulation 1.06: Stationary Source Self-Monitoring, Emissions Inventory Development, and Reporting

5. The in-stack self-monitoring and reporting provisions in Sec. 1 only require that the owner or operate "maintain records of monitoring data and make periodic reports of these data…at the time intervals required by the District." This severely restricts citizens' ability to monitor and ensure accountability with permit requirements because the required data are not publicly available. This section should be revised to require that all self-monitoring data be submitted to the District electronically on a quarterly basis in the units in which the data are collected. If, for example, NOx or SO_2 CEMs data is collected at 15-minute intervals, the 15-min data shall be submitted electronically to the District. This does not represent an increased burden on the regulated community because much of this data is currently reported quarterly and electronically to the U.S. EPA.

6. The emissions and related data reporting in Sec. 3 and enhanced emissions data for TACs in Sec. 4 do not require that emissions that occur during malfunctions, startups, and shutdowns be reported. This is a serious omission as a recent study has demonstrated that "annual upset emissions can actually exceed the total annual emissions a company reports to the state" and that "upset emissions release toxic and carcinogenic chemicals that threaten the health and safety of communities already overburdened with toxic pollutants." (EIP 8/04,[1] pp. 1-2.). **There is cause for significant local concern with omitting such emissions in the new program. In a Dec. 21, 2003 article, the *Courier-Journal* reported 4,193 incidences of industry self-reported upsets from 1996 through Oct. 2002, with at least 12 Louisville companies reporting more than 20 upsets in one or more years and at least 4 Louisville companies reporting more than 100 upsets in one or more years.**

7. The enhanced emissions reporting for toxic air contaminants ("TACs") in Section 4 only applies to Category 1 and 1A TACs, as defined in Reg. 5.23, Sec. 3. These two categories include only 38 HAPs -- those that had a cancer risk greater than one in one million or a noncancer hazard quotient greater than 1.0 in the *West Louisville Air Toxics Study* and those with a risk-screening environmental indicator score equal to or greater than 500 in the 2001 Toxic Release Inventory ("TRI") for Jefferson County. Thus, no reporting would be required for the 153 chemicals in Categories 2 and 3. Many of these excluded chemicals were not analyzed or measured in the *West Louisville Air Toxics Study* (e.g., mercury, dioxin) or are not reported in the TRI. Therefore, initially, reporting should be required for all categories of air contaminants. Those that are subsequently routinely reported can be narrowed based on a District-approved risk assessment.

[1] Environmental Integrity Project (EIP), Gaming the System: How Off-the-Books Industrial Upset Emissions Cheat the Public Out of Clean Air, August 2004, www.environmentalintegrity.org/pub240.cfm.

8. The plot plan information in Sec. 4.3.1 should be expanded to include the identification on the plot plan and UTM coordinates of any public roads or rail tracks that run through the property or any other areas within the property boundary to which the public has access.

9. The process information in Sec. 4.3.2 should be expanded to include particle size data for any process that releases air contaminants as particulate matter. Further, where actual emissions differ from uncontrolled emissions, the control methods used to reduce emissions should be identified and described and assumed control efficiencies should be reported and supported by measurements or engineering calculations, certified by an independent registered professional engineer in the State of Kentucky.

10. The stack information in Sec. 4.3.3 should be expanded to include the identification of any stacks that are equipped with rain caps or which receive emissions via a bypass of any of upstream pollution control equipment. If a bypass is feasible, the conditions under which a bypass would occur and the frequency and chemical and physical characteristics of the bypass should be included in the report.

11. The flare information in Sec. 4.3.5 should be expanded to include all of the information required to model flare gas plume rise. See, for example, Beychok 1993.[2] This should include, in addition to the items now required in Sec. 4.3.5, maximum volumetric flow rate, the frequency of releases as a function of flow rate, and the flared gas net heating value for all likely flaring scenarios, supported by calculations used to determine the heating value.

12. This regulation requires the reporting of TAC emissions for sources and chemicals for which there may be no emission factors or other methods to accurately estimate TAC emissions. Thus, this regulation should be expanded to explicitly require stack testing for at least one typical source for each regulated contaminant likely to be present for which there are no valid published emission factors, e.g., emission factors classified in AP-42 as at least C.

13. The certification requirements in Section 5 should be expanded to require that an independent registered professional engineer in the State of Kentucky and a "responsible corporate official" sign and seal all emission statements and supporting information as accurate and representative of the source.

14. A new section on public review should be added to this regulation. This section should require that all emission statements and supporting information be subject to a 90-day public review and comment period. Any party that resides or works within the one in one million cancer risk isopleth or the 0.20 hazard quotient isopleth should be notified and provided on request a complete copy of the emission statement and supporting information. The public review period should be publicly noticed in the *Courier-Journal* and the *Defender* and by either posted mail or e-mail to any party requesting notification.

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[2] Milton R. Beychok, Fundamentals of Stack Gas Dispersion, 3rd Ed., 1994, Chapter 11.

A public hearing should be scheduled if requested by any party. The notification should include the name and address of the facility; the inclusive dates of comment period; the procedure for requesting a public hearing; a statement of whether the facility's emissions pose a public health threat (cancer risk greater than one in one million, noncancer hazard index greater than 0.20) and if so, a map showing the subject locations; a summary of the emission statement and results of analyses pursuant to Reg. 5.20 to 5.23; a public location where the emission statement and supporting files may be inspected; and a web link where the emission statement is posted in searchable and discoverable format. A complete copy of the emission statement and the entire file supporting the emission statement should be made available at the closest branch of the Louisville Free Public Library. Further, this section should require that all draft and final emission statements be posted on the District's website in a format that allows formulas to be inspected and the documents searched with commonly available software such as Excel or Word to facilitate public review. Emission statements in pdf should be specifically prohibited as the supporting calculations cannot be inspected.

15. Section 3.6 should be expanded to explicitly require that the supporting calculations and all data and assumptions used in the emissions calculations be disclosed in the emission statement. Any source tests or other measurement data that is used shall be included in full in appendices to the emission statement. All stack tests and other measurements relied on in emission calculations should be certified by an independent registered professional engineer in the State of Kentucky as accurate and representative of the source.

Regulation 1.07: Excess Emissions During Startups, Shutdowns, and Malfunctions

16. There are four problems with the definition of "excess emissions" in Sec. 1.2:

- The first sentence, line 16, defines "excess emissions" only as emissions that exceed an "applicable emission standard." This excludes TACs, which are not regulated with emission standards but rather with EALs. This sentence should be expanded to define "excess emissions" as "emissions that exceed an applicable emission standard *or an environmental acceptability level*" to assure that TACs regulated under Reg. 5.21 are included. Similarly, "or an *environmental acceptability level*" should be inserted in the second sentence, line 17, after the phrase "an acceptable emission standard."

- The second sentence, lines 19-21, suggests that volatile organic compounds are an acceptable surrogate for TACs (e.g., benzene, 1,3-butadiene). This is not acceptable because it ignores the differing health effects and potencies of individual compounds, conflicting with the goal of Reg. 5.21. Therefore, this parenthetical should be struck.

- The second sentence, lines 23-25, also defines "excess emissions" as an "appreciable increase in the emissions of a toxic air contaminant above the routine level of emissions that results from a startup, shutdown, or malfunction." The

term “appreciable increase” should be defined. We suggest that it be defined as any emission, which, by itself, would exceed the standards in Reg. 5.21.

- “An appreciable increase” of a TAC is defined in lines 24-25 relative to the “routine level of emissions that results from a startup, shutdown, or malfunction.” There is, generally, no such thing as a “routine” level of emissions during anomalous operating conditions such as startups, shutdowns, and malfunctions. These emissions are nonroutine. Thus, excess emissions should be defined absolutely, not relative to another quantity that is itself nonroutine.

17. Section 2.2 should be expanded to include the phrase “*an environmental acceptability level*” in line 35 after “in violation of the applicable emission standard.”

18. Section 2.3 sets out eight factors that the District may consider in determining the appropriate enforcement action for excess emissions. This approach does not provide an incentive for facilities to prevent and reduce excess emissions, but rather perpetuates excess emissions by setting out the conditions for bargaining with the District. This section should establish stipulated penalties for excess emissions, regardless of cause, automatic and mandatory, based on the amount and toxicity of the emissions, and require reductions in routine emissions by at least an equal amount. The penalties should be high enough to make it more economic to prevent excess emissions than release them.

19. Reporting procedures for startups and shutdowns are set out in Section 3. These procedures should be modified to include the following additional considerations:

First, Sec. 3.1 requires only that the District be notified in writing 3 days before planned startups and shutdowns that release excess emissions. This section should be modified to require that both the District and the affected public be notified of planned startups and shutdowns to allow the public to leave the area, shelter in place, or take other actions to protect itself from the excess emissions.

Second, Sec. 3.2 requires only that the District be notified no later than 1 hour following the start of an unplanned startup or shutdown that releases excess emissions. This section should be modified to require that both the District and the affected public be notified of malfunctions. The public could be notified through a community alarm system or an automatic telephone calling system of the type recently implemented by the Metro Emergency Management Agency.

Third, Sec. 3.5 sets out the information that must be provided in the initial notification pursuant to Secs. 3.1 and 3.2. The required information should be expanded to include: (1) the method of calculating emissions; (2) the amount by which the emissions exceed regulatory limits; (3) the regulatory limits that apply; (4) calculations to determine if Regs. 5.01 and 5.20 - 5.23 are complied with; and (5) the methods that will be used to monitor emissions.

Fourth, Sec. 3.8 sets out the information that must be provided in the report at the conclusion of a startup or shutdown that releases excess emissions. The required information should be expanded to include: (1) the method of calculating emissions; (2) the amount by which the emissions exceeded regulatory limits; (3) the regulatory limits that apply; (4) calculations to determine if Regs. 5.01 and 5.20 - 5.23 were violated; (5) the methods used to monitor and the resulting monitoring data collected during the event. The report should be signed and sealed by an independent registered professional engineer in the State of Kentucky and a "responsible corporate official."

20. Reporting procedures for malfunctions are set out in Section 4. These procedures should be modified to include the following additional considerations:

First, Sec. 4.1 requires only that the District be notified no later than 1 hour following the start of a malfunction that releases excess emissions. This section should be modified to require that both the District and the public be notified of malfunctions. The public could be notified through a community alarm system or an automatic telephone calling system of the type being implemented by the Metro Emergency Management Agency.

Second, Sec. 4.7 sets out the information that must be provided in the report filed no later than 15 calendar days after the excess emissions from a malfunction ended. The required information should be expanded to include: (1) the method of calculating emissions; (2) the amount by which the emissions exceeded regulatory limits; (3) the regulatory limits that apply; (4) calculations to determine if Regs. 5.01 and 5.20 - 5.23 were violated; (5) the methods used to monitor and the resulting monitoring data collected during the event. The report should be signed and sealed by an independent registered professional engineer in the State of Kentucky and a "responsible corporate official."

Third, Sec. 4.8 sets out the information that must be provided in a followup report no later than 60 days after the excess emissions cease. This section should explicitly require that this information include sufficient process data, supported by operating logs, to explain the root cause of the accident. The report shall be signed and sealed by an independent registered professional engineer in the State of Kentucky.

21. Section 5 allows a facility to obtain a Board Order to allow it to operate with excess emissions for malfunctions exceeding 30 days. This section should be modified to require that facilities that exceed their emission standards or EALs for more than 8 hours be shutdown until the malfunction is corrected, unless it is demonstrated to the District, subject to public review, that the excess emissions do not exceed the EALs in Reg. 5.21 and NAAQS in Reg. 3.01.

22. The excess emission regulation should be modified to include a section that requires the use of best available technologies and methods to monitor excess emissions. This section should require routine monitoring of both flares and cooling towers, which are major sources of excess emissions.

23. The excess emission regulations should be modified to centrally track all excess emissions and to make this information easily accessible to the public using an electronic reporting system similar to that in Texas.[3] Facilities should be required to report excess emissions electronically within 24 hours, and immediately for TACs. The public should be able to access these reports through the District website within 72 hours.

Regulation 1.20: Malfunction Prevention Programs

24. This regulation only requires a Malfunction Prevention Program at an "affected facility." An "affected facility" is narrowly defined as a facility that previously reported a malfunction, that the District determines had a malfunction, or at a facility that the District determines is appropriate, to "minimize the likelihood of the occurrence of a malfunction that may become harmful to public health or welfare." The definition of "affected facility" in Sec. 1.1.3 should be revised to require a Malfunction Prevention Program if the emissions from a facility could potentially exceed the EALs in Reg. 5.21, based on worst-case potential emissions.

Regulation 5.01: General Provisions

25. There are several provisions of this regulation that render the STAR program and its environmental acceptability levels ("EALs") unenforceable as a practical matter. The EALs, the heart of the STAR program, are only enforceable if the construction and operating permits include emission standards based on the EALs in Reg. 5.21. However, Reg. 5.01 does not require any emission standards in operating permits; for existing sources; for sources that emit small amounts of certain criteria pollutants; or for sources that emit Category 2 and 3 TACs. These issues are discussed further below.

26. Section 4.1 requires that construction permits for certain new or modified sources that may emit a toxic air contaminant include emission standards to implement Reg. 5.21. **Reg. 5.01 is silent on whether emission standards are also required in operating permits or for existing sources.** Thus, Sec. 4.1 should be modified to apply to both construction and operating permits and new, modified, and existing sources. We recommend the following replacement language for Sec. 4.1, lines 85-87: "Construction and operating permits required by the provisions of the Part 2 regulations for a new, modified, or existing process or process equipment that may emit a toxic air contaminant shall, except as exempted pursuant to section 4.2, incorporate the following provisions:"

27. Section 4.1.1 of this regulation only requires that TAC emission standards be established in construction permits for Group 1 and 2 stationary sources. The permits for other new or modified sources that do not fall into either group would not contain any conditions to make the provisions of the STAR program enforceable as a practical matter. The definition of Group 2 sources in Section 1.8.2, lines 57-59, for example, excludes sources that emit 25 ton/yr or less of SO_2, NOx, VOCs, and particulate matter. However,

[3] See the Air Emission Event Report Database, accessible through "Emission Events," at www.tceq.state.tx.us/subject/subject_air.html.

many sources can emit enough toxic air contaminants to exceed the EALs in Reg. 5.21, but emit 25 ton/yr or less of SO_2, NOx, VOCs, and particulate matter. These include noncombustion processes in chemical plants. Thus, the 25 ton/yr exclusion should not be allowed. This regulation should be redrafted to require emission standards in permits for any new, modified, or existing source that emits air contaminants that exceed the EALs in Reg. 5.21.

28. Section 4.1.2, lines 92-97, requires the construction permit for a new or modified process that emits a Category 2 or 3 TAC to only "demonstrate" that it complies with the EALs in Reg. 5.21, Sec. 2.2 or "demonstrate" that it complies with Reg. 5.01, Sec. 3. The method or criteria that would be used to make this demonstration are not identified. Further, a one-time demonstration does not make a condition continuously enforceable over the life of the facility. **Therefore, the provisions of the STAR program as they relate to Category 2 and 3 TACs are not enforceable as a practical matter for 153 TACs, or 80% of those regulated under the STAR program.**

29. Section 4.1.2.2, line 97, ends with an "and." It appears that something has been omitted.

30. The general duty clause in Section 3 is not adequate, by itself, to assure that the STAR program is complied with. Specific permit limits are required to assure compliance and enforceability.

31. A section should be added requiring notification of all members of the public who reside within a public health hazard zoned, defined as within: (a) the isopleth for the one in one million cancer risk for all TACs; (b) the isopleth for 1.0 hazard quotients for all acutely toxic TACs; or (c) the isopleth for the 1.0 hazard quotient for all chronically toxic TACs.

Regulation 5.20: Methodology for Determining Benchmark Ambient Concentration of Toxic Air Contaminant

32. Section 4.5 allows certain occupational exposure levels ("OELs") to be used to calculate a noncarcinogenic benchmark ambient concentration (BAC_{NC}) if other sources of data in Sec. 4.1 to 4.4 are not available. The acceptable data sources are the lower of NIOSH and ACGIH threshold limit values ("TLVs") or ceiling levels. The occupational exposure level ("OEL") is divided by a composite factor of safety of 100 to account for differences in susceptibility between the healthy, adult worker population and the general population.

This factor of safety is not adequate to protect public health. It is well known that NIOSH and ACGIH OELs frequently are set at levels at which adverse health effects occur.[4] Therefore, they are frequently not even protective of healthy adult workers and

[4] S.A. Roach and S.M. Rappaport, But They Are Not Thresholds: A Critical Analysis of the Documentation of Threshold Limit Values, American Journal of Industrial Medicine, v. 17, 1990, pp. 727-753.

require additional conservatism when extrapolated to the general population as a "threshold," as here. Further, we note that the method used to calculate the factor of safety of 100 is based on an 8-hour TLV. An OEL ceiling level, which is contemplated in Sec. 4.5, is typically based on a 15-minute exposure duration. The factor of safety for a 15-minute exposure, using the procedure in Sec. 4.5 would be 10,000. Thus, we recommend that the factor of safety in equation 6 be increased from 100 to a minimum of 1000, consistent with standard practice,[5] and adjusted to correspond to the exposure duration of the underlying OEL. Finally, since the District has publicly stated that development of the draft STAR program was based on an international, as well as national search, of comparable programs, we also recommend that the sources of OEL data be expanded to include German[6] and Swedish OELs.

33. This regulation only sets out a procedure to determine benchmark ambient concentrations ("BACs") for substances that are either carcinogenic or chronicly toxic. Section 5 assumes that compliance with the chronic BAC protects the public from acute effects. This is reliably correct only if the chronic BACs apply on a 1-hour basis, which is not proposed. The District should set out a procedure for determining acute BACs and establish corresponding EALs in Reg. 5.21.

34. It appears that each regulated source will have to develop BACs for its facility. This will place a heavy burden on the District and public for review. We suggest that the District develop and publish the BACs.

Regulation 5.21: Environmental Acceptability for Toxic Air Contaminants

35. This regulation establishes environmental acceptability levels ("EALs") for the sum of all carcinogens (EAL_C) based on risk in Secs. 2.2.3, 2.5.3, and 2.8.2, but fails to establish a parallel EAL for the sum of all noncarcinogens. Exposed parties inhale all noncarcinogens and carcinogens simultaneously, not on a compound-by-compound basis. Thus, an EAL_{NC} based on the hazard quotient should be established in Secs. 2.2.3, 2.5.3, and 2.8.2 for the sum of all acute noncarcinogens emitted by a source. This value should be no greater than 1.0.

36. The goals established in Sec. 2.2 may be modified, at the discretion of the District, and subject to public comment. The District need only consider, among other unidentified factors, whether the process(es) use best available technology for toxics ("T-BAT"). Sec. 2.3. This section should be modified to allow relaxing Sec. 2.2 goals only if the subject process(es) use T-BAT. The factors that may be considered in waiving Sec. 2.2 requirements, when T-BAT is used, should be identified.

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[5] See, for example, Donald G. Barnes, Reference Dose (RfD): Description and Use in Health Risk Assessments, Regulatory Toxicology and Pharmacology, v. 8, 1988, pp. 471-486, Table 1.

[6] Deutsche Forschungsgemeinschaft, List of MAK and BAT Values 2003: Maximum Concentrations and Biological Tolerance Values at the Workplace, Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area, Report No. 39, Wiley-VCH GmbH & Co. KgaA, 2003.

37. The goals established in Sec. 2.5 may be modified, at the discretion of the District, and subject to public comment. The District need only consider, among other unidentified factors, whether the process(es) use best available technology for toxics ("T-BAT"). Sec. 2.6. This section should be modified to allow relaxing Sec. 2.5 goals only if the subject process(es) use T-BAT. The factors that may be considered in waiving these requirements should be identified.

38. Only Group 1 and 2 stationary sources must determine whether the allowed emissions from all processes and process equipment comply with the EAL levels in Secs. 2.5.1-2.5.3. This and other regulations in the STAR program do not require that other sources (that are not in Groups 1 or 2) demonstrate compliance. Further, this and other regulations in the STAR program do not require that EALs in Reg. 5.21, Secs. 2.2 are complied with. Section 3 should be modified to require that all sources that emit TACs at levels that would exceed EALs in Secs. 2.2, 2.5, and 2.8 determine whether allowed emissions comply with the EALs.

39. Section 3 appears to only require demonstration of compliance once, at dates varying according to the type of source and ranging from December 31, 2005 to June 30, 2008. This section should be modified to require subsequent verification if allowed emissions increase or if actual emissions increase and the source was granted an exception under Sec. 3.3 and otherwise, every five years.

40. Sources subject to this regulation tend to occur in clusters. Thus, cumulative emissions from more than one nearby facility may pose an unacceptable health risk to nearby communities. This regulation should be revised to consider cumulative risk, including a grant of authority to the District to require emission reductions below those required to meet single source EALs. Cumulative risk should be less than the EALs in Sec. 2.8.

41. The definition of T-BAT in Sec. 1.1 should be modified to exclude the consideration of economic factors in cases where emissions exceed the EALs in Secs. 2.2, 2.5, or 2.8.

42. The procedure used to calculate EALs only considers direct exposure by the inhalation route. Communities can be exposed by direct air emissions via other routes and mechanisms that are not considered, including dermal contact, ingestion, and bioaccumulation. Mercury, for example, bioaccumulates. These other routes should be considered in calculating EALs for all TACs.

Regulation 5.22: Procedures for Determining the Maximum Ambient Concentrations of a Toxic Air Contaminant

43. The factors contained in Tables 1 and 2 cannot be evaluated without supporting calculations. We suggest that a staff report be provided when the draft rule is released that supports the calculations and assumptions in Regs. 5.20, 5.21, and 5.23.

44. The procedures for determining maximum ambient concentrations in Sec. 1 should be expanded to clarify that: (1) this is the maximum concentration wherever the public has access, regardless of the existing land use; (2) that maximum permitted emissions should be used; and (3) that excess emissions, regardless of cause, must be considered.

45. The procedures in this section appear to be applicable only to gases. These procedures should be expanded to address TACs that are emitted as particulate matter, including requiring particle size distribution data and other inputs required to model deposition.

Regulation 5.23: Categories of Toxic Air Contaminants

46. This regulation establishes four categories of TACs – Categories 1, 1A, 2, 3, and 4. It appears that the goals, standards, and reporting requirements in Regs. 5.01 and 5.21 only apply to Categories 1 and 1A, e.g., see Reg. 5.21, Sec. 3. The chemicals in Categories 1 and 1A are those that have been detected at levels of concern in Louisville air, or reported at high levels in the EPA's TRI. This is problematical because many highly toxic compounds have either not been measured in Louisville air, or are not accurately reported, or are not reported at all in the TRI. Mercury and dioxins, for example, would not be regulated under the proposed STAR program. Thus, we object to these categories and urge the District to replace them with two categories.

We agree that those compounds that have been detected at levels of concern in Louisville air should be a priority to reduce and thus could be placed in Category 1. However, the balance of the TACs should be placed in Category 1A and initially evaluated by all affected facilities. Criteria should be established for eliminating individual TACs from Category 1A (but not Category 1) based on their relative contribution to cancer risk or the noncancer hazard quotient.

47. Section 5 exempts any substance that currently has an ambient air quality standard. As discussed in Comment 4, substances with an ambient air quality standard contribute to the overall public health risk of exposed communities. These substances should be included in calculating the cancer risk (lead) and noncancer hazard quotient (NOx, SO_2, CO, PM10).

48. Carbon dioxide is exempted from being considered a toxic air contaminant in Sec. 5.2. Carbon dioxide is an asphyxiant that displaces oxygen from the breathing atmosphere. Elevated concentrations can cause cardiovascular effects like tachycardia, arrhythmias, and ischemia. It exerts a direct toxic effect to the heart, resulting in diminished contractile force. It is a vasodilator and the most potent cerebrovascular dilator known. Its respiratory effects include hyperventilation, cyanosis, and pulmonary edema. Neurologic effects include dizziness, headaches, sleepiness, and mental confusion.[7] Further, it poses a grave threat to public health from global warming. Thus, it should be removed from the list of exempted substances and added to Category 1A, as modified based on our Comment 46.

[7] Philip Wexler, Encyclopedia of Toxicology, Academic Press, New York, 1998, v. 1, pp. 222-223.

49. This regulation should be expanded to establish a procedure to add TACs to those currently listed.

Closing

In closing, the *West Louisville Air Toxics Study* demonstrated the strong need for a local comprehensive air toxics program. While the Sierra Club urges several revisions that could be made in the scope and implementation of the program and public access to data, the draft STAR program represents a reasonable approach to achieving essential reductions in harmful air toxic emissions that threaten the health and welfare of our citizens.

Sincerely,

Greater Louisville Group of the Sierra Club

Leslie Barras	Joan Lindop
Co-Chair and Conservation Chair	Co-Chair

c: Lane Boldman, Chair, Cumberland Chapter of the Sierra Club
Dr. Phyllis Fox, P.E.
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